Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A measurement method in which size information related to at least two directions of a mark formed on an object is measured, the method comprising:

a first image import process in which a first image of the mark is imported by a measurement unit in a first state where the object is set to a reference direction;

a second image import process in which a second image of the mark is imported by the measurement unit in a second state where at least a part of the mark is rotated by a predetermined angle $\alpha(0°<\alpha<180°)$ from the first state;

a first measurement process in which an image processing accompanied with an edge detection process is applied to the first image and a first size related to a first direction orthogonal to the reference direction of the mark is measured; and

a second measurement process in which an image processing accompanied with an edge detection process is applied to the second image and a second size related to a second direction rotated by the angle α with respect to the first direction of the mark is measured.

2. (Original) The measurement method of Claim 1 wherein

the mark is arranged on a plurality of positions on the object, and

in the first image import process and the second image import process, a plurality of mark images are imported, and

in the first measurement process and the second measurement process, the first size and the second size are measured for each of the plurality of marks.

3. (Original) The measurement method of Claim 1 wherein

the mark contains a first line element that extends in the reference direction and a second line element that extends in a direction rotated by the angle α with respect to the reference direction, and

the first size of the mark is the size of the first line element in the width direction and the second size of the mark is the size of the second line element in the width direction.

4. (Original) The measurement method of Claim 1 wherein

the mark contains a first element and a second element that are arranged to make a measurement direction of the size intersect at the predetermined angle α on the object, and in order to measure the size of the first element related to the first direction as the first size of the mark, at least an image of the first element whose measurement direction is substantially orthogonal to the reference direction is imported as the first image in the first state, and in order to measure the size of the second element related to the second direction as the second size of the mark, at least an image of the second element whose measurement direction is substantially orthogonal to the reference direction is imported as the second image in the second state.

5. (Original) The measurement method of Claim 4 wherein

after the object is arranged within the measurement unit so that the measurement direction of the first element is arranged substantially orthogonal to the reference direction and the first image has been imported, the object is rotated substantially by the predetermined angle α and the second image is imported.

6. (Original) The measurement method of Claim 4 wherein

the mark contains at least one first mark containing the first element and the second element and at least one second mark whose first element and second element are rotated substantially by the predetermined angle α with respect to the first mark, and an image import of at least the first element of the first mark in the first state and an image import of at least the second element of the second mark in the second state are performed without substantially rotating the object.

7. (Original) The measurement method of Claim 6 wherein

the first mark and the second mark are each formed on the object under the same conditions except for the position of the object in the rotational direction.

8. (Original) The measurement method of Claim 1 wherein

the angle α is 90 degrees.

9. (Original) The measurement method of Claim 1 wherein

the mark is a transferred image of a predetermined measurement mark transferred onto the object by an exposure apparatus.

10. (Original) The measurement method of Claim 9 wherein

the mark is formed at different positions within the same area on the object in one exposure operation by the exposure apparatus, and each of a transfer characteristic related to different directions of the exposure apparatus is obtained based on a mark size measured at each of the positions.

11. (Original) The measurement method of Claim 9 wherein

the mark is formed in different areas on the object in a plurality of exposure operations by the exposure apparatus, and each of a transfer characteristic related to different directions of the exposure apparatus is obtained based on a mark size measured in the different areas.

12. (Original) The measurement method of Claim 9 wherein

the mark is formed on different areas of the object in a first exposure performed at least once by the exposure apparatus and a second exposure performed at least once in which the rotational angle of the object substantially differs by the predetermined angle α from the first exposure, and at least a part of the mark formed by the first exposure is imported as the first image and at least a part of the mark formed by the second exposure is imported as the second image.

13. (Original) The measurement method of Claim 12 wherein

transfer conditions of the exposure apparatus including the measurement mark are set the same in the first exposure and the second exposure, and at least a first segment of the mark formed by the first exposure is imported as the first image and at least a second segment of the mark different from the first segment formed by the second exposure is imported as the second image.

14. (Original) The measurement method of Claim 13 wherein

the first segment and the second segment substantially have the same configuration, and the number of exposures of the first exposure and the second exposure is almost the same.

15. (Original) The measurement method of Claim 12 wherein

the first exposure and the second exposure are each performed a plurality of times, and a plurality of a first area where marks are formed in the first exposure and a plurality of a second area where marks are formed in the second exposure are substantially alternately arranged on the object.

16. (Currently Amended) The measurement method ~~in any one of Claims 1 to 15~~ of Claim 1wherein

the measurement unit is a charged particle beam scanning measurement unit.

17. (Original) A transfer characteristic measurement method in which a transfer characteristic related to two different directions of an exposure apparatus that transfers a pattern formed on a mask onto an object is measured, the method comprising:

a transfer process in which a mark containing a first element and a second element used to measure the transfer characteristic in the two directions is formed using the exposure apparatus;

an image import process in which the object is set to a reference direction within a measurement unit and a first image, which is at least a part of the mark containing one of the first element and the second element, is imported along with a second image, which is at least a part of the mark containing the other element of the first element and the second element whose rotational angle substantially differs from when the first image is imported by an angle α ($0°<\alpha<180°$) substantially the same as an intersecting angle of the two directions; and

a measurement process in which the first image and the second image are processed and a first size and a second size related to the two directions of the mark are respectively measured.

18. (Original) The transfer characteristic measurement method of Claim 17 wherein

the second image import is performed after the first image has been imported by the measurement unit and the object has been rotated substantially at the angle α.

19. (Original) The transfer characteristic measurement method of Claim 17 wherein

in the transfer process, the mark is formed each on different areas of the object in a first exposure performed at least once by the exposure apparatus and a second exposure performed at least once by the exposure apparatus in which the rotational angle of the object substantially differs by the predetermined angle α from the first exposure, and

in the image import process, after at least one of the first element and the second element of a first mark formed in the first exposure has been imported as the first image, at least the other element of the first element and the second element of a second mark formed in the second exposure is imported as the second image without substantially rotating the object.

20. (Original) The transfer characteristic measurement method of Claim 19 wherein

in the first exposure and the second exposure, transfer conditions of the exposure apparatus including a predetermined measurement mark are set the same, and in both the first mark and the second mark the configuration of the first element and the second element is substantially the same.

21. (Original) The transfer characteristic measurement method of Claim 19 wherein

the first exposure and the second exposure are each performed a plurality of times, and a size of the one mark obtained from the plurality of image processing of the first mark is to be decided as a first size related to one of the two directions, and a size of the other mark obtained from the plurality of image processing of the second mark is to be decided as a second size related to the other one of the two directions.

22-39. (Canceled)

40. (New) An adjustment method of an exposure apparatus, the method comprising:

a measurement process in which a pattern transfer characteristic of the exposure apparatus that transfers a pattern formed on a mask onto an object is measured using the transfer characteristic measurement method of Claim 17; and

an adjustment process in which the exposure apparatus is adjusted based on results of the measurement.

41. (New) The adjustment method of the exposure apparatus of Claim 40 wherein the exposure apparatus has a projection optical system that projects an image of the pattern on the object, and the transfer characteristic includes an image-forming characteristic of the projection optical system.

42. (New) A device manufacturing method that includes a transfer process in which a pattern formed on the mask is transferred on a photosensitive object using the exposure apparatus whose pattern transfer characteristic has been adjusted according to the adjustment method of Claim 40.

43. (New) A transfer characteristic measurement method in which a pattern transfer characteristic of an exposure apparatus that transfers a pattern formed on a mask onto an object is measured, the method comprising:

a first transfer process in which a measurement mask that has a pattern area where at least one predetermined measurement mark is formed is loaded into the exposure apparatus and exposure is performed to transfer the pattern area onto the object;

a second transfer process in which the pattern area is transferred onto the object in a state where at least one of the measurement mask and the object is rotated so that an angle of the object with respect to the measurement mask is altered at a predetermined angle α ($0°<\alpha<180°$) from the first transfer process;

an image import process in which an image of a first transferred image of the measurement mark formed on the object in the first transfer process and an image of a second transferred image of the measurement mark formed on the object in the second transfer process are imported by the measurement unit in a state where the object is set to a reference direction; and

a measurement process in which an image processing accompanied by an edge detection processing is applied to the image of the first transferred image and the image of the second transferred image that have been imported, and at least a size is measured related to a measurement direction orthogonal to a direction corresponding to the reference direction of each of the first transferred image of the measurement mark and the second transferred image of the measurement mark.

44. (New) The transfer characteristic measurement method of Claim 43 wherein

in the measurement process, each of the size related to the measurement direction is measured with a part of the transferred image of the measurement mark formed in the first transfer process serving as the first transferred image, and a part of a transferred image of the measurement mark formed in the second transfer process different from the first transferred image also serving as the second transferred image.

45. (New) The transfer characteristic measurement method of Claim 43 wherein

the measurement mark contains a first mark element and a second mark element that are different from each other, and at least a part of a transfer area of the measurement mark is made to differ in the first transfer process and the second transfer process so that one transferred image of the first mark element and the second mark element formed in one of the first transfer process and the second transfer process and the other transferred image of the first mark element and the second mark element formed in the other process of the first transfer process and the second transfer process do not overlay each other on the object.

46. (New) The transfer characteristic measurement method of Claim 43 wherein

the measurement mark contains a first mark element and a second mark element that are different from each other, and in the measurement process, each of the size related to the measurement direction is measured with a transferred image of one of the first mark element and the second mark element formed in the first transfer process serving as the first transferred image and a transferred image of the other one of the first mark element and the second mark element formed in the second transfer process serving as the second transferred image.

47. (New) The transfer characteristic measurement method of Claim 43 wherein

the size of the transferred image of the measurement mark related to a first direction and a second direction that intersect each other of the exposure apparatus is respectively decided, based on results of the measurement.

48. (New) The transfer characteristic measurement method of Claim 43 wherein

in the first transfer process and the second transfer process, the pattern area is respectively transferred onto a plurality of different places on the object, and

in the image import process, a plurality of the first transferred images of the measurement mark each transferred onto a plurality of different places on the object in the first transfer process and a plurality of the second transferred images of the measurement mark each transferred onto a plurality of different places on the object in the second transfer process are imported, and

in the measurement process, the image processing of each of the plurality of the first transferred images and the plurality of the second transferred images is performed, and the size related to the measurement direction is decided for each of the first transferred image and the second transferred image.

49. (New) The transfer characteristic measurement method of Claim 43 wherein

the measurement mark contains a first mark element and a second mark element that are different from each other, and in the measurement process, each of the size related to the measurement direction is measured with a transferred image of one of the first mark element and the second mark element formed in the first transfer process serving as the first transferred image and a transferred image of the other one of the first mark element and the second mark element formed in the second transfer process serving as the second transferred image, and according to results of the measurement, variation of the size is obtained.

50. (New) The transfer characteristic measurement method of Claim 43 wherein

on the measurement mask, the measurement mark is formed in a plurality of numbers at different positions within the pattern area, whereby

in the image import process, an image of the first transferred image of the measurement mark formed on the object in the first transfer process and an image of the second transferred image of the measurement mark formed on the object in the second transfer process are imported for each of the measurement marks in a plurality of numbers, and

in the measurement process, based on the size related to the measurement direction of the first transferred image and the second transferred image of the measurement marks in a plurality of numbers, an in-plane uniformity of the size related to the measurement direction of both the first transferred image and the second transferred image is further measured.

51. (New) The transfer characteristic measurement method of Claim 43 wherein

in the first transfer process and the second transfer process, transfer conditions of the exposure apparatus including a predetermined measurement mark are set the same, and the measurement mark contains a first mark element and a second mark element that substantially have the same configuration so as to measure each of the transfer characteristic related to a first direction and a second direction that intersects each other of the exposure apparatus.

52. (New) The transfer characteristic measurement method of Claim 43 wherein

the measurement mark is formed within the pattern area at a plurality of different positions, and in each of the first transfer process and the second transfer process, transfer of the pattern area is performed a plurality of times, and in the measurement process, the size of both the first transferred image and the second transferred image of each measurement mark related to the measurement direction is measured in each of the plurality of areas on the object on which the pattern area is transferred.

53. (New) The transfer characteristic measurement method of Claim 43 wherein

the measurement mark contains a first line pattern element that extends in the reference direction and a second line pattern element that extends in a direction rotated by the angle α with respect to the reference direction, and

the size of the first transferred image of the measurement mark related to the measurement direction is the size of the transferred image of the first line pattern element in the width direction, and the size of the second transferred image of the measurement mark related to the measurement direction is the size of the transferred image of the second line pattern element in the width direction.

54. (New) The transfer characteristic measurement method of Claim 43 wherein

the angle α is 90 degrees.

55. (New) The transfer characteristic measurement method of Claim 43 wherein

the measurement unit is a charged particle beam scanning measurement unit.

56. (New) An adjustment method of an exposure apparatus, the method comprising:

a measurement process in which a pattern transfer characteristic of the exposure apparatus that transfers a pattern formed on a mask onto an object is measured using the transfer characteristic measurement method of Claim 43; and

an adjustment process in which the exposure apparatus is adjusted based on results of the measurement.

57. (New) The adjustment method of the exposure apparatus of Claim 56 wherein

the exposure apparatus has a projection optical system that projects an image of the pattern on the object, and the transfer characteristic includes an image-forming characteristic of the projection optical system.

58. (New) A device manufacturing method that includes a transfer process in which a pattern formed on the mask is transferred on a photosensitive object using the exposure apparatus whose pattern transfer characteristic has been adjusted according to the adjustment method of Claim 56.

59. (New) A transfer characteristic measurement method in which a transfer characteristic related to a first direction and a second direction that intersect each other of an exposure apparatus that transfers a pattern formed on a mask onto an object is measured, the method comprising:

a formation process in which a mark containing a first element whose measurement direction substantially coincide with the first direction and a second element whose measurement direction substantially coincide with the second direction is formed on the object using the exposure apparatus; and

a measurement process in which a size related to the measurement direction is measured and the first element and the second element of the mark formed on the object are detected so that the measurement directions are almost in the same direction within a measurement unit.

60. (New) An adjustment method of an exposure apparatus, the method comprising:

a measurement process in which a pattern transfer characteristic of the exposure apparatus that transfers a pattern formed on a mask onto an object is measured using the transfer characteristic measurement method of Claim 59; and

an adjustment process in which the exposure apparatus is adjusted based on results of the measurement.

61. (New) The adjustment method of the exposure apparatus of Claim 60 wherein the exposure apparatus has a projection optical system that projects an image of the pattern on the object, and the transfer characteristic includes an image-forming characteristic of the projection optical system.

62. (New) A device manufacturing method that includes a transfer process in which a pattern formed on the mask is transferred on a photosensitive object using the exposure apparatus whose pattern transfer characteristic has been adjusted according to the adjustment method of Claim 60.

63. (New) A transfer characteristic measurement method in which a transfer characteristic related to a first direction and a second direction that intersect each other of an exposure apparatus that transfers a pattern formed on a mask onto an object is measured, the method comprising:

a formation process in which a mark containing a first element and a second element whose measurement directions substantially coincide with the first direction and the second direction is formed as a first mark and a second mark whose rotational angle differs at substantially the same angle as an intersecting angle of the first direction and the second direction on the object using the exposure apparatus; and

a measurement process in which one of the first element and the second element of the first mark formed on the object and the other of the first element and the second element of the second mark formed on the object whose measurement direction substantially coincides with the one of the first element and the second element of the first mark are detected, and a size of the first element of the mark and a size of the second element of the mark related to the measurement direction are respectively measured.

64. (New) An adjustment method of an exposure apparatus, the method comprising:

a measurement process in which a pattern transfer characteristic of the exposure apparatus that transfers a pattern formed on a mask onto an object is measured using the transfer characteristic measurement method of Claim 63; and

an adjustment process in which the exposure apparatus is adjusted based on results of the measurement.

65. (New) The adjustment method of the exposure apparatus of Claim 64 wherein the exposure apparatus has a projection optical system that projects an image of the pattern on the object, and the transfer characteristic includes an image-forming characteristic of the projection optical system.

66. (New) A device manufacturing method that includes a transfer process in which a pattern formed on the mask is transferred on a photosensitive object using the exposure apparatus whose pattern transfer characteristic has been adjusted according to the adjustment method of Claim 64.